REMARKS

Summary of Amendments

1. Claims 1 through 8 were originally presented in this application. New claims 9 through 13 have been added. No claims have been cancelled. Claims 1 through 13 remaining pending.

Claim Rejections - 35 U.S.C. § 112

2. Claims 1 through 8 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. In particular, the Examiner states: "In claim 1 there is no proper antecedent basis for 'the maximum outer diameter' and 'the minimum outer diameter.'"

3. Claim 1 has been amended to address this issue. In particular, "the maximum outer diameter" has been amended to recite " [[the]] a maximum outer diameter," and "the minimum outer diameter" has been amended to recite " [[the]] a minimum outer diameter." These amendments are ministerial and non-substantive in nature. They are not intended to (and are not believed to) alter the scope and/or subject matter of the amended claims as originally presented.

Claim Rejections - 35 U.S.C. § 102

Claims 1, 2, 3, and 5; Ito et al. '763

4. Claims 1, 2, 3, and 5 stand rejected under 35 U.S.C. § 102(3) as being anticipated by U.S. Pat. No. 6,465,763 to *Ito et al.* In particular, the Examiner states: "Ito shows the device . . . having the diameter of 150 mm or 200 mm with the side of the ceramic substrate having the surface roughness of .1 to 200 microns. Having such a surface roughness would extend the outer diameter to either 150.2 or 200.2 mm which yields the difference of .13% or .1%, respectively, which meets the claimed ratio of 0.8% or less."

5. Applicants respectfully traverse this rejection. While the instant application and *Ito et al.* both address the problem of achieving a uniform temperature distribution in a ceramic substrate, fundamentally different approaches have been taken to solve the problem. The instant application has focused on the macro-scale shape (i.e., the geometric shape) of the ceramic substrate. In particular, the instant application recognizes that the eccentricity of the substrate (the ratio of the maximum and minimum diameters of an ellipse) appreciably effects substrate

temperature uniformity (see page 4, lines 5-13 of the original specification). Applicants have found that the temperature uniformity of the wafer surface can be improved by minimizing the eccentricity (such that the geometric shape of the substrate is substantially circular). Moreover, Applicants havve also found that the eccentricity of the substrate can vary along the thickness of the substrate. Thus in independent claim 1, as originally submitted, Applicants have defined the geometric shape of the substrate by reciting a ceramic susceptor in which the difference between maximum and minimum diameters of an outer surface of the ceramic substrate is less than 0.8 percent of an average diameter of the substrate.

6. On the contrary, *Ito et al.* have focused on the surface roughness of the side face of the substrate. Surface roughness is a well known micro-scale phenomenon. In particular, *Ito et al.* teach a ceramic heater having its side face coarsened "to have a roughness within a given range" (column 2, lines 25-26). The intent of the coarsened side face is apparently to promote "point contact" with a supporting case and thereby suppress heat conduction from the ceramic heater (column 2, lines 27-31). *Ito et al.* go on to state:

> If the surface roughness of the side face is tool large, such an effect like a heat-radiating fin is exhibited even when the substrate contacts a seal ring. Thus, heat is radiated so that a low-temperature area is generated in the peripheral portion of the ceramic substrate. On the other hand, if the surface roughness is too small, the contact area with the seal ring becomes large... Therefore, amount of heat-radiation is increased so that a low-temperature area is generated in the peripheral portion of the ceramic substrate (column 2, lines 32-42).

In particular *Ito et al.* specify: "the surface roughness Rmax of the side face of the ceramic substrate should be set to 0.1 to 200 μm, and is desirably set to 0.5 to 200 μm" (column 2, lines 52-54).

7. Applicants therefore respectfully submit that *Ito et al.* are not referring to the geometric shape of the substrate but rather to the degree of smoothness (or non-smoothness) of its side face. That this is the case is abundantly clear by their control of Rmax, which is a well known surface roughness parameter stipulating the vertical distance between the peak and trough in a cross section. In other words, Rmax essentially refers to the height of micro-scale protrusions/asperities on the non-smooth side face of the substrate. Rmax is defined for example by JIS B 0601-1982. Moreover, it should be further stated that Rmax bears no relationship to the geometric shape of a circular/elliptical substrate (i.e., the ratio of its major to minor axes). In design drawings, for example, tolerances

pertaining to the eccentricity and surface roughness of the substrate are designated separately and distinctly.

8. Applicants further submit that the prior art of record (including *Ito et al.*) is void of any teaching, or even any suggestion, of a substrate having maximum and minimum outer diameters, not to mention teaching that the difference between those diameters is less than 0.8 percent of an average diameter.

Rejections under 35 U.S.C. § 103

Claims 4, 6, 7, and 8; Ito et al. '763 in view of Yoshida et al. '970 or Kowada et al. '260

9. Claims 4, 6, 7, and 8 stand rejected under U.S.C. § 103(a) as being unpatentable over the *Ito et al.* reference in view of U.S. Pat. No. 6,080,970 to *Yoshida et al.* or U.S. Pat. No. 5,665,260 to *Kowada et al.* Applicants respectfully submit that this rejection is rendered moot in view of the remarks set forth above in paragraphs 5 through 8 of this paper.

10. Applicants therefore respectfully submit that independent claim 1, as amended, is patentable over the prior art of record. Independent claim 1 being allowable, it follows that pending dependent claims 2 through 8 must also be allowable, since these dependent claims carry with them all the elements of independent claim 1.

11. New independent claim 9 is presented for consideration in this paper. New claim 9 recites a ceramic susceptor comprising "a substantially disk shaped ceramic substrate having minimal eccentricity such that a difference between maximum and minimum outer diameters is less than 0.8 percent of an average outer diameter of the substrate." New claim 9 is supported by original claim 1 as well as page 4, lines 5-13 of the original specification, such that no new search is believed to be required and no new matter has been added.

12. Applicants respectfully submit that new claim 9 distinguishes patentably over the prior art of record for the same reasons as claim 1 (see Paragraphs 5 through 7 above). New claim 9 explicitly states "a substantially disk shaped ceramic substrate having minimal eccentricity such that a difference between maximum and minimum outer diameters is less than 0.8 percent of an average outer diameter of the substrate." As stated above, *Ito et al.* is void of any specific teaching regarding the geometric shape of the substrate, and in particular the eccentricity thereof.

13. New claims 10, 11, 12, and 13, which depend from new claim 9, are also presented for consideration in this paper. New claim 10 is supported, for

example, by page 4, lines 5-13 of the original specification, and particularly lines 11 and 12, which state that irregularity in the outer diameter of the substrate can originate in the perpendicularity of the circumferential surface. New claim 11 is supported for example by Tables I, II, and III of the original specification. New claims 12 and 13 are supported, for example, by page 5, lines 7-11 of the original specification No new matter has been entered and it is believed that no new search is required.

14. New claims 10 through 13 depend from new claim 9 and therefore must also be allowable for same reasons as new claim 9.

A response to this Office Action was due by November 30, 2005, and consequently a Petition for Extension of Time, along with a credit-card payment authorization form, is attached hereto. Please consider this Amendment as timely filed.

Accordingly, Applicant courteously urges that this application is in condition for allowance. Reconsideration and withdrawal of the rejections is requested. Favorable action by the Examiner at an early date is solicited.

Respectfully submitted,

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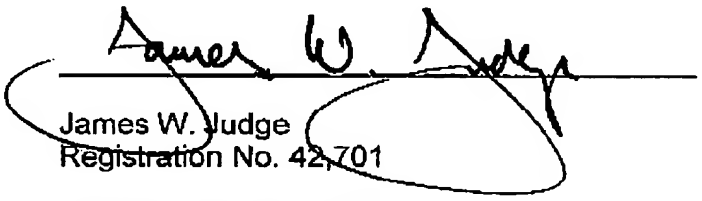

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